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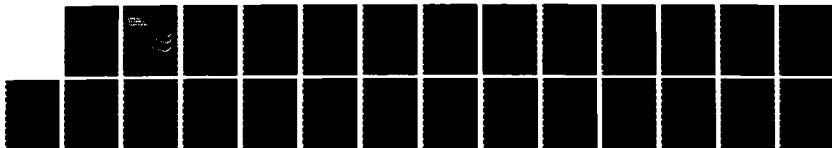
SHIP ARRANGEMENTS CONFIGURATION MANAGEMENT PROGRAM(U)
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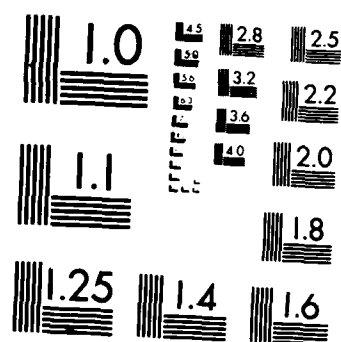
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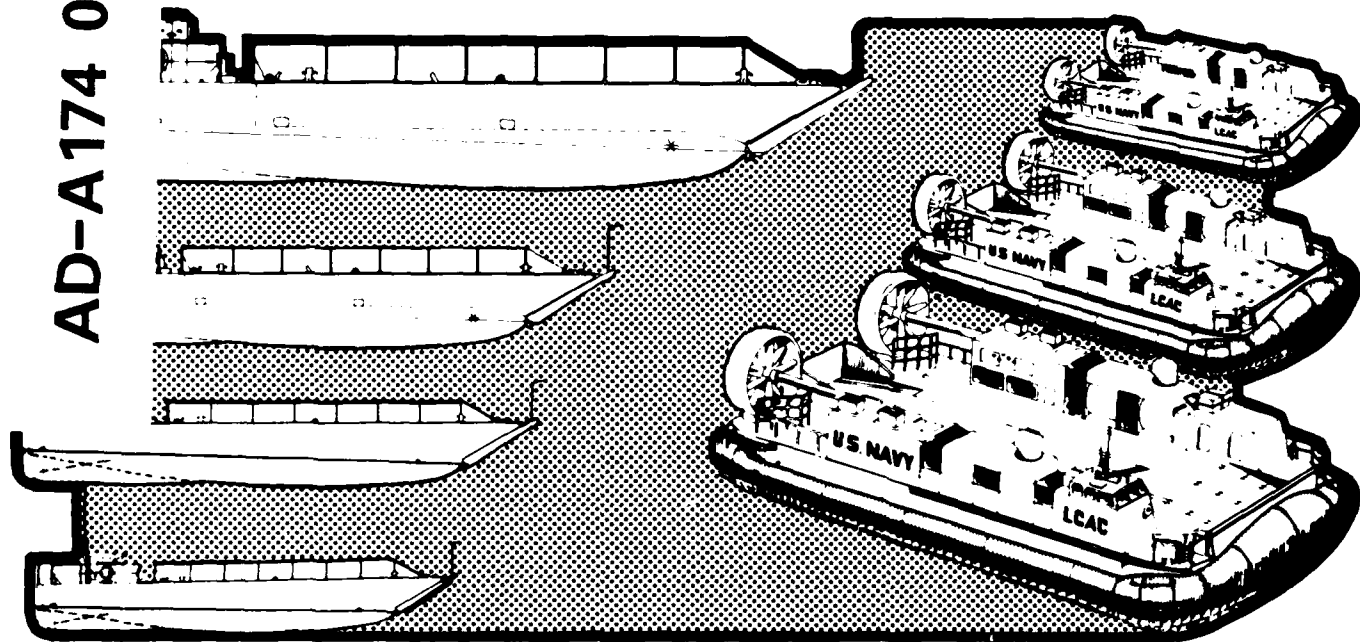
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SHIP ARRANGEMENT CONFIGURATION MANAGEMENT
by: D. Nelson

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SHIP ARRANGEMENTS CONFIGURATION MANAGEMENT PROGRAM

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SHIP ARRANGEMENT CONFIGURATION MANAGEMENT

ABSTRACT

Ship arrangements is a critical ship system since the size, location, configuration and access of compartments affect the performance, supportability and survivability of the systems contained in them; the performance and safety of the personnel assigned to the compartments; and, by extension, the overall performance and survivability of the ship as a whole. Ship arrangements is, therefore, a system which should be placed under NAVSEA life-cycle technical control.

In a practical sense, consistent arrangements across a class of ships increases the cost-effectiveness of implementing ShipAlts and other class-wide changes and improves the supportability of installed systems.

This paper addresses the purposes, procedures, products and participants of the Ship Arrangement Configuration Management Program being implemented by NAVSEA 55W1. Examples from the initial application of the program on battleship and destroyer types are presented.



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ABBREVIATIONS AND ACRONYMS
Used Throughout Paper

APM	Assistant Program Manager
C&A	Compartment and Access and Deck Support (Drawing)
CDA	Class Design Agent
CSD	Computer Supported Design
GADS	General Arrangement Design System
INSURV	Board of Inspection and Survey
LCM	Life Cycle Manager
SACMP	Ship Arrangement Configuration Management Program
SAP	Ship Alteration Proposal
SAR	Ship Alteration Record
SC&N	Space Classification and Nomenclature
SDM	Ship Design Manager
SHAPM	Ship Acquisition Program Manager
SID	ShipAlt Installation Drawing
SLM	Ship Logistic Manager
SRD	Selected Record Drawing
SSCS	Ship Space Classification System
TSR	Technical Support Request

INTRODUCTION

In 1984, the Vice Commander, Naval Sea Systems Command (NAVSEA), promulgated a memorandum (Reference 1) in which he expressed his philosophy regarding NAVSEA's engineering responsibilities, established objectives for carrying out these responsibilities and requested specific actions to achieve these objectives. This "Global Memo" states in part:

It is NAVSEA's responsibility to provide to the Fleet ships and weapons systems with superior combat capabilities, that are survivable and reliable at sea both in wartime and peacetime, and that can be maintained during extended deployments by the operating crews.

In discharging this responsibility, the H,M&E objective is for "NAVSEA Headquarters to exercise technical control of critical systems and components of ships from inception and throughout lifetime in the Fleet...."

Ship arrangements is a critical system because it affects total ship capabilities and has an impact on the operational effectiveness of practically every individual ship system, as well. It is therefore mandatory that the configuration of ship arrangements be managed in a continual and highly competent manner by NAVSEA, utilizing the manpower and expertise of Expanded Planning Yards acting as Class Design Agents (CDAs) in accordance with the Fleet Modernization Program (FMP) Manual (Reference 2).

OPNAV INSTRUCTION 4720.93 (Reference 3) recognizes the disadvantages of unauthorized ship-to-ship alterations and rearrangements:

(1) No matter how well intentioned, rearrangements during construction or at other times invariably result in added design and production costs, interference, and often in ripout and rework of the area involved. Although the magnitude of each individual item may be small, and the construction or overhaul may be on a fixed price basis, the overall result is escalation of shipbuilding and repair costs.

(2) The ship's plans do not reflect the changes made after the as-built plans are issued, causing interference problems when authorized alterations are subsequently accomplished or requiring costly detailed ship checks prior to a shipyard availability.

(3) Non-essential alterations and rearrangements performed or requested by ship's force and tenders waste a significant portion of the scarce talent that should be employed on essential maintenance and repair work. Further, the time spent by ship's force in developing non-essential alterations detracts from the constant attention to detail required of the ship's force in present day ship's propulsion plant, weapons systems, electronics suit, and supply and outfit.

(4) Any alteration worth doing should be done in all ships of a class. Unauthorized alterations are not fed back for inclusion in the Fleet Modernization Program (FMP), so the other ships of the class do not benefit from possible improvement resulting from the alteration.

Responsibility for part of the problem is laid at the feet of NAVSEA:

In order to insure that a specific alteration recommended for accomplishment is applicable to all ships of a class in both fleets, considerable time elapses between proposal of new alterations and the eventual approval and authorization action, including funding. Accomplishment of alterations by unauthorized procedures is known to stem in part from the length of this review process. Rapid processing of alteration proposals at all levels of review will do much to alleviate this situation.

In order to increase NAVSEA technical control of ship arrangement configuration and to improve the quality and timeliness of responses to the Fleet, the Ship Arrangement Configuration Management Program (SACMP) is being established.

BACKGROUND

Until recently, the Ship Arrangements Design Division (SEA 55W1) has functioned in a reactive mode, responding to Technical Support Requests (TSRs) from the various Ship Logistic Managers (SLMs) and participating in acquisition, modernization and conversion designs as part of a design team under the direction of project management. The SACMP is an effort to put SEA 55W1 in a more active, self-starting mode of operation. It is intended to improve the quality and timeliness of responses to tasking from outside the Ship Arrangements Design Division and also to encourage and facilitate action on the part of individual arrangement task leaders in discovering shortcomings and deficiencies in existing ship arrangements and initiating corrective action.

One prerequisite for this type of program is the possession of up-to-date information on the actual arrangement configuration of existing ships. In the past, information on the general arrangements of any particular ship in the Fleet was available primarily through Booklets of General Drawings which might be years out of date or contain information on compartment use or configuration that reflected the authorized rather than the actual case. Due to a recent expansion in the number of ship's Selected Record Drawings (SRDs), compartment and access and deck support (C&A) drawings are now SRDs for most ship types. NAVSEA Instruction 9085.3 (Reference 3) directs SLMs to "budget for the maintenance of these selected record drawings throughout the ship's operational life." Consequently, more current and complete information will now be available on each ship as it comes out of an overhaul or availability.

PROGRAM OBJECTIVES

Generally speaking, the objective of the SACMP is to provide the Fleet with improved combat readiness capability. The specific objectives of the program are to:

- o develop and document ship arrangements and access design standards, procedures and practices to be used in preparing new ship designs and in providing life cycle engineering support of existing ships.
- o recommend changes to ship synthesis models to more accurately reflect current ship arrangement criteria and practices.
- o provide technical guidance and recommendations concerning ship arrangements to Ship Acquisition Program Managers (SHAPMs), SLMs, Ship Design Managers (SDMs), NAVSEA technical codes and CDAs.
- o review technical products of CDAs and NAVSEA codes for conformance with ship arrangement criteria and practices and recommend changes where appropriate.
- o conduct configuration audits, based on the latest update of arrangements SRDs, to determine if arrangement design requirements are met on each ship under configuration management.
- o initiate Ship Alteration Proposals (SAPs) for recommended changes to existing ships based on the best practicable arrangement designs.
- o reduce the time required to prepare SAPs and review Ship Alteration Records (SARs) by having accurate arrangement information on all affected ships immediately available.
- o develop and maintain near-term ship arrangement configuration management drawings depicting changes to be accomplished by approved and recommended alterations during the next availability of each ship under configuration management.
- o review and coordinate long-range feasibility studies affecting ship arrangements; provide technical support to SDMs, SLMs and CDAs in the latter's developing and maintaining projected class (or ship) baseline drawings.
- o provide SDMs and SLMs with technical advice in managing the efforts of CDAs participating in the SACMP.
- o reduce the number of ship-initiated unauthorized changes by more closely monitoring ship arrangement configuration and providing timely responses to requests from the Fleet.

TECHNICAL DOCUMENTATION

The program will have as its technical basis the following documentation:

a. The Ship Space Classification System (SSCS) will be the framework for technical documentation developed by the program. For details of the SSCS, see Reference 4.

b. Design standards and practices for ship arrangements have been documented and those for access are being developed. These requirements will form the technical basis for the SACMP.

c. The Operational and Technical Information System (OTIS) will contain information related to shipboard operations and technical data required to develop ship arrangement design criteria and to implement the configuration management program. OTIS will include data and information collected from OPNAV, NAVSEA, laboratories, shipyards, industry, Navy activities or extracted from Navy operational or engineering publications. The system organization will be based on the SSCS. Each branch within the division may maintain a separate system of information that applies only to the ship types under its cognizance.

PROGRAM DESCRIPTION

The SACMP consists of three phases. The purpose of each, its procedures and products are described below. Figure 1 shows the sequence of events in the program and highlights the products of the primary participants.

Phase I - Configuration Reporting

Purpose. To determine the current general arrangement configuration of each ship in all classes under configuration management.

Procedures. CDAs will perform shipchecks of each ship at the end of every industrial period. CDAs will then update SRDs and forward nonreproducible copies of arrangement SRDs to SEA 55W1.

Products. Updated general arrangement SRDs: Booklets of General Drawings, C&A Drawings and Topside Arrangement Drawings depicting the actual configuration and use of all compartments and areas in each ship.

Phase II - Configuration Management (Near Term)

Purpose. To ensure that arrangeable area in each ship is used to the best advantage and in the most efficient manner possible to maximize mission effectiveness, system supportability and ship survivability. To promote consistency of ship configuration and compartment use throughout class to increase supportability and efficiency of implementing technological improvements class-wide.

Procedures. Updated general arrangement SRDs are audited by SEA 55W1 life-cycle managers (LCMs) to confirm proper implementation of general arrangement changes during the last availability and to detect design deficiencies and unauthorized changes in compartment location, configuration, access or use. SAPs to correct any discrepancies are prepared by the LCM and forwarded to the cognizant SLM. An area/volume report is developed and maintained by SEA 55W1 based on SRDs. Area/volume data are compared with data on other ships in the class to evaluate consistency within the class and to develop trends in area utilization.

SAPs are developed in response to TSRs from the SLMs based on requests for arrangement changes from the Fleet and NAVSEA codes or on recommendations from the Board of Inspection and Survey (INSURV).

The SLM forwards approved SAPs to the responsible CDA to be developed into SARs. When SARs are programmed, the CDA develops ShipAlt Installation Drawings (SIDs) depicting changes to ship arrangements.

SAR/SID integration drawings showing the complete general arrangements of each ship are developed by the CDA. Beginning with the updated arrangement SRDs from Phase I as a baseline, drawings are generated and modified by the CDA to reflect arrangement changes that will result from programmed ShipAlts before and during the ship's next industrial period. These SAR/SID integration drawings serve as design and integration tools for the CDA.

Near-term configuration management drawings are prepared by the SEA 55W1 LCM using the updated SRDs from Phase I as a baseline. These drawings are modified to reflect programmed ShipAlts and SAPs resulting from the configuration audit that have not yet been approved. These drawings are used by the SEA 55W1 LCM to conduct studies and as configuration management tools. An area/volume report is developed based on these drawings.

Mark-ups of the configuration management drawings and the area/volume report are used to record recommended changes forwarded as SAPs developed by the LCM in response to requests from the SLM or to correct discrepancies discovered during arrangement configuration audits.

Periodically, the CDA forwards the latest version of the SAR/SID integration drawings to NAVSEA for information and concurrence. These drawings are reviewed by the SEA 55W1 LCM for proper implementation of programmed arrangement changes. The integrated arrangement changes shown on these drawings are compared with those on the near-term configuration management drawings and any discrepancies are resolved between the LCM and the CDA.

Once all changes programmed for the next availability have been incorporated in the SAR/SID integration drawing, it is forwarded to NAVSEA where it is reviewed by technical codes and--if approved--returned to the CDA to be used as a configuration control drawing during detail design and work package development.

At the completion of the ship's availability, Phase I SRD updates take place, and the procedures of Phase II start all over again. This process continues for the entire service life of the ship.

Products. SAPs initiated by the LCMs to correct deficiencies or discrepancies discovered during general arrangement configuration audits or bring the configuration into line with SEA 55W1 general arrangement and access design standards and practices.

SAPs in response to TSRs from the SLMs based on requests from the Fleet, NAVSEA or INSURV.

SARs/SIDs prepared by the CDAs based on approved SAPs.

SAR/SID integration drawings prepared and maintained by the CDA to show arrangement changes programmed for the next industrial availability. This drawing may also be annotated to indicate all ShipAlts that affect a particular compartment even though they do not all result in arrangement configuration changes. The final version of this drawing, if approved by NAVSEA, can be used by the CDA as a configuration control drawing during the industrial availability.

Near-term configuration management drawings prepared and maintained by the SEA 55W1 LCM showing approved general arrangement changes programmed for each ship's next industrial period. This drawing is the baseline for studies performed by the LCM to develop arrangements change proposals.

Mark-ups of the near-term configuration management drawings used in SEA 55W1 to keep a record of recommended (but not yet approved or programmed) changes.

Area/volume reports containing data for the current configuration of each ship based on SRDs, for the arrangements shown on the configuration management drawings and for the recommended changes originated by LCMs.

Phase III - Configuration Management (Far Term)

Purpose. To support long-term Warfighting Improvement Plan Engineering (WIPE) efforts by providing a general arrangements baseline for performing long-range feasibility studies and integrating changes approved for accomplishment within a time-frame established by the SLM or the SDM.

Procedures. Projected class (or ship) baseline general arrangement drawings are developed and maintained by the CDA for the cognizant SLM or SDM. The SLM or SDM directs studies and determines the time-frame of changes to be reflected on the drawings. SEA 55W1 provides technical support of feasibility studies and reviews projected baseline drawings.

Products. Projected class (or ship) baseline general arrangement drawings and feasibility studies to support WIPE as directed by SLMs and SDMs.

PROGRAM ORGANIZATION

The SACMP is structured to function within the framework of ship acquisition, fleet maintenance and warfighting improvement programs as they currently exist in NAVSEA. CDA resources will be used as approved and funded by SLMs and SDMs and coordinated with the Ship Alteration and Planning Yard Management Office (SEA 05E) in accordance with Reference 2. The Director, Ship Arrangements Design Division (SEA 55W1) is the SACMP Program Manager. He is assisted in carrying out his responsibilities by coordinators for ship arrangements design requirements, access design requirements, computer supported design and space classification and nomenclature.

Responsibility for management of the configuration of the various types of ships is delegated by the manager to the branch heads having cognizance over those types. The branch heads act as Assistant Program Managers (APMs) in supporting the Program Manager. Within each branch, the task leader responsible for each class of ships is the LCM for the general arrangements of that class of ships.

Figure 2 illustrates the structure of the SACMP and the flow of responsibility for managing the program.

SPECIFIC DUTIES

Program Manager

The Program Manager is responsible for establishing and accomplishing program objectives. He or she directs the planning, control and organization of program resources and tasks so that objectives are accomplished. The Program Manager reports directly to the Director, Naval Architecture Sub-Group (SEA 55W). Specific duties of the Program Manager are to:

- a. Direct the establishment of ship arrangement and access design criteria and the documentation and dissemination of these criteria and design practices; ensure that specifications related to access design are kept up to date.
- b. Direct the development and use of computer aids in improving ship arrangements design and configuration management.
- c. Direct engineering investigations and preparation of Engineering Change Proposals (ECPs) and SAPs to optimize ship arrangements and solve compartmentation and access problems arising from construction or operation of assigned ships, both in response to requests from SHAPMs and SLMs and as actions originating within SEA 55W1 as responses to recognized needs.

d. Direct the preparation of material for rendering technical advice and support to the chain of command and outside activities; comment on proposals and other technical correspondence.

e. Represent the U.S. Navy as its technical expert on ship arrangements design and configuration management at conferences and symposia, on professional society committees and panels and in correspondence and foreign technical exchanges.

f. Appoint Technical Points of Contact (TPOCs) and coordinators in the areas of ship arrangements and access design, computer-aided design and ship compartment nomenclature and assign the duties of each.

g. Designate specific ship classes that will be included in the configuration management program.

h. Supervise the overall planning, organization and tasking of the program; acting through the APMs, assign responsibilities and supervise the activities of LCMs engaged in the configuration management of their assigned ship classes.

Ship Arrangement Design Requirements Coordinator

The Ship Arrangement Design Requirements Coordinator is responsible to the Program Manager for the development and documentation of ship arrangement design standards and practices that apply to all ships. He or she assists the Program Manager in ensuring that all arrangement designs produced by SEA 55W1 are consistent with these documented requirements and that these requirements are made available to other design agencies--both public and private--engaged in designing new ships or performing fleet maintenance support work for the Navy. Each branch head may appoint a ship arrangement design coordinator to develop and document design requirements unique to ship types assigned to his or her branch.

Access Design Requirements Coordinator

The Access Design Requirements Coordinator is responsible to the Program Manager for developing and documenting personnel access design standards and practices. He or she coordinates the circulation, review and submission of proposed changes to Section 071 of the General Specifications for Ships of the U.S. Navy and the General Specifications for Overhaul of Surface Ships. He or she ensures that personnel access studies are performed in a consistent manner throughout the division and acts as consultant to LCMs concerning use of the PERSFLO computer program.

Computer Supported Design Coordinator

The Computer Supported Design (CSD) Coordinator is responsible to the Program Manager for the development of computerized ship arrangement design tools and for their proper interface with other design disciplines. He or she will train division personnel in the use of these tools and will act as consultant on CSD matters for all arrangement LCMs.

Space Classification and Nomenclature Coordinator

The Space Classification and Nomenclature (SC&N) Coordinator is responsible to the Program Manager for the development and maintenance of the Ship Space Classification System (SSCS) which will be used throughout the program in structuring and organizing data related to ship spaces in area/volume reports, comparative studies, estimating relationships, etc. He or she is responsible for updating DOD Standard 2150(SH) and ensuring that ship compartment standard nomenclature as documented in MIL STD 1624(SH) is used in the SSCS. The SC&N Coordinator acts as consultant to arrangement LCMs on matters related to the SSCS or compartment standard nomenclature.

Assistant Program Managers

The Assistant Program Managers (APMs) are responsible to the Program Manager for the accomplishment of program objectives regarding the ship types assigned to them. Specifically, APMs will:

- a. Ensure that all designs under their cognizance are prepared in accordance with the criteria, procedures and practices developed by the coordinators for ship arrangements and access.
- b. Make their personnel available for CSD training and ensure implementation of CSD within their branches.
- c. Ensure that the SSCS and ship compartment standard nomenclature are used in all applicable products of their branches.
- d. Direct the development of ship arrangement design procedures and practices that are unique to ship types or classes under their cognizance or that address in more detail the general requirements developed by the coordinators for ship arrangements and access.
- e. Take appropriate steps to ensure that SHAPMs, SLMs and SDMs responsible for the acquisition and maintenance support of ship classes assigned to their branches are made aware of the objectives of the program and provide the funding necessary to accomplish them.
- f. Supervise the activities of the LCMs engaged in the configuration management of assigned ship classes.
- g. Monitor the ship arrangements configuration management process within their branches and make recommendations for improvements to the Program Manager.

Life Cycle Managers

The Life Cycle Managers (LCMs) are responsible to the Program Manager through the APMs for the configuration management of general arrangements of ships assigned to them from acquisition design through the end of service life. Specific duties of LCMs are to:

- a. Serve as ship arrangement task leaders during all phases of acquisition design and throughout service life of assigned ships.

b. Ensure that ship arrangement and access design standards and practices are followed in all designs for which they are responsible; use the SSCS and ship compartment standard nomenclature in all applicable products.

c. Upon receipt of updated ship arrangement SRDs, audit the configuration of each ship for proper incorporation of approved changes, to detect unauthorized configuration changes and to ensure all applicable arrangement and access design standards are being met by the current configuration.

d. Initiate SAPs to correct deficiencies discovered during the configuration audit and forward them to the cognizant SLM via the SDM.

e. Maintain data on the latest validated configuration of each ship assigned.

f. Develop and maintain near-term configuration management drawings depicting the approved general arrangements of each ship at the end of its next industrial availability.

g. Assist SLMs, SDMs and CDAs in conducting long-range feasibility studies; coordinate ship arrangement requirements with cognizant NAVSEA codes; provide technical direction to CDAs in preparation of projected baseline drawings.

h. Develop and maintain area/volume reports for each configuration developed.

i. Develop a prioritized list of new compartments or functions for each ship (or class) required to meet validated operational, maintenance or human support requirements.

j. Take an active part in the ShipAlt development, review and approval process; attend Configuration Control Board (CCB) meetings whenever ship arrangements matters or changes are on the agenda.

k. Become personally proficient in the use of the computerized general arrangement design system (GADS).

Class Design Agents

The functions of the Expanded Planning Yards acting as Class Design Agents (CDAs) are defined in Reference 2. However, duties specifically related to the SACMP are summarized below.

a. Establish and maintain a ship arrangements configuration control program as directed by the cognizant SLM or SDM for assigned ship classes.

b. Maintain custody of, revise and update arrangement SRDs on a continuing basis; ensure modifications and corrections to all affected drawings are based on as-built conditions and reflect actual uses of ship compartments.

c. Review SAPs and prepare SARs when tasked by the cognizant SLM and submit to NAVSEA for approval. (SLM forward to SDM to circulate to technical code LCMs for review.)

d. Shipcheck assigned hulls for first-time installations of ShipAlts.

e. Prepare SIDs when tasked by SLMs following technical guidance provided by LCMs or contained in SAPs.

f. Perform design integration of programmed alterations.

g. Develop SAR/SID integration drawings incorporating changes due to ShipAlts programmed for each ship's next industrial availability.

h. Conduct shipchecks as directed to verify configuration and to detect ship-to-ship variations in arrangements within a class.

i. Develop and maintain projected class (or ship) baseline general arrangement drawings to be used in far-term configuration management; perform long-range feasibility studies as directed by SLMs and SDMs.

INITIAL EFFORTS

The first applications of the SACMP have been in a battleship and two destroyer class programs. The current status of these efforts and activities related to the three phases of the SACMP are discussed below.

Battleship SACMP Status

Two battleships have completed Post-Shakedown Availabilities (PSAs). SEA 55W1 has received the updated Booklet of General Drawings for one and is on the distribution list for the other booklet. The CDA has been tasked to update the C&A Drawings (as part of the Expanded Ship Selected Record Drawing (ESSRD) effort) at the completion of the ships' first scheduled Selected Restricted Availabilities (SRAs). In the interim, SEA 55W1 has "shipcheck validated" C&A Drawings which were developed for the Warfighting Improvement Plan Engineering effort for the one, and hopes to develop a similar set for the other. SEA 55W1 is on the permanent distribution list for these items and will obtain copies when they become available.

Documentation for one of the battleships is being audited to ensure that proper general arrangement criteria and practices are being invoked on the ships. Near-term study drawings entitled "General Arrangement Configuration Management Drawings" have been developed. These drawings indicate the current, NAVSEA-approved general arrangements of each ship. They also list the scheduled ShipAlts (both Title D and K) and ordnance alterations (OrdAlts) planned for the next SRA. The CDA is maintaining these drawings and is tasked to incorporate them into an SRA "Overhaul Design Guidance Package (ODGP)" for the first SRA. An area/volume data base is being developed and will be updated through ship service life.

SEA 55W1 is utilizing audit results and the Configuration Management Drawing to initiate ship alterations for incorporation into the ships. For example, SEA 55W1 has determined that the battleships warrant more ship store and physical fitness facilities than were provided during the modernization. (See Figure 3.) SAPs have been recommended to address this item on a class basis. (See Figure 4.)

Far-term study drawings entitled Projected Ship Baselines (PSBs) have been developed for a battleship using the C&A drawing format. These drawings show the ship general arrangement configuration incorporating all alterations scheduled in the Battleship Warfighting Improvement Plan (BBWIP). This effectively provides a ship baseline through her second regular overhaul. A similar set of drawings is being developed for another battleship and will be completed this fiscal year. On completion, the CDA is tasked to maintain and update them following NAVSEA direction.

SEA 55W1 provides technical support to this effort by reviewing any alterations being considered for implementation in the BBWIP or revisions of existing alterations.

Destroyer SACMP Status

One destroyer of a class under the SACMP completed her most recent availability in August 1985. In September, SEA 55W1 received copies of SRDs reflecting the ship's current configuration and compartment utilization. Figure 5 is an example of the updated Booklet of General Drawings for the ship. Six other ships of the class completed availabilities in the first quarter of this fiscal year and SEA 55W1 is expecting delivery of updated SRDs which will be included in the SACMP data base.

The SRDs for the destroyer are being audited to ensure proper execution of the approved general arrangement changes and to detect discrepancies. Any discrepancies detected will be documented and evaluated and recommended solutions will be forwarded to the SLM. An area/volume report will be developed based on the updated SRDs.

Efforts are underway to task the CDA to develop a computerized configuration management baseline drawing reflecting the current NAVSEA approved configuration of the ship. This drawing and the area/volume report will be utilized as near-term planning documents to reflect configuration changes programmed for accomplishment before and during the ship's next industrial period.

As part of the WIPE efforts, computerized general arrangement drawings were developed and are maintained by the CDA. For this destroyer class, these drawings reflect four different projected class baseline (PCB) configurations based on various combinations of four major combat system components. There is only one PCB for the second destroyer class under the SACMP. These drawings show all projected configuration and access changes due to approved ship alterations. They reflect the PCB configurations into the 1990s. Figure 6 is an example of the PCB drawing for the first class showing the same deck area depicted in Figure 5.

SEA 55W1 provides technical support and review of inputs to these PCB drawings. The drawings are updated annually to incorporate new or revised general arrangement configuration data.

CONCLUSION

The Ship Arrangement Configuration Management Program is still in the formative stages. Policies and procedures are being worked out between the major participants on a continuing basis to ensure that the program meets the real needs of the Fleet, produces workable tasks for the CDAs and increases NAVSEA technical control of ship arrangements. The program as described above has been discussed with representatives from several planning yards and 55W1 is coordinating its efforts with those of the Ship Alteration and Planning Yard Management Office (NAVSEA 05E).

REFERENCES

1. NAVSEA 09 memo ser 49 of 1 May 1984, Subj: Long Range Hull, Mechanical and Electrical Engineering Objectives of NAVSEA
2. Fleet Modernization Program (FMP) Management and Operations Manual (SL 720-AA-MAN-010)
3. OPNAV Instruction 4720.93 of 13 June 1983, Subj: Unauthorized Alterations of Ships; prohibition of
4. DOD Standard 2150(SH) series, Subj: Ship Space Classification System

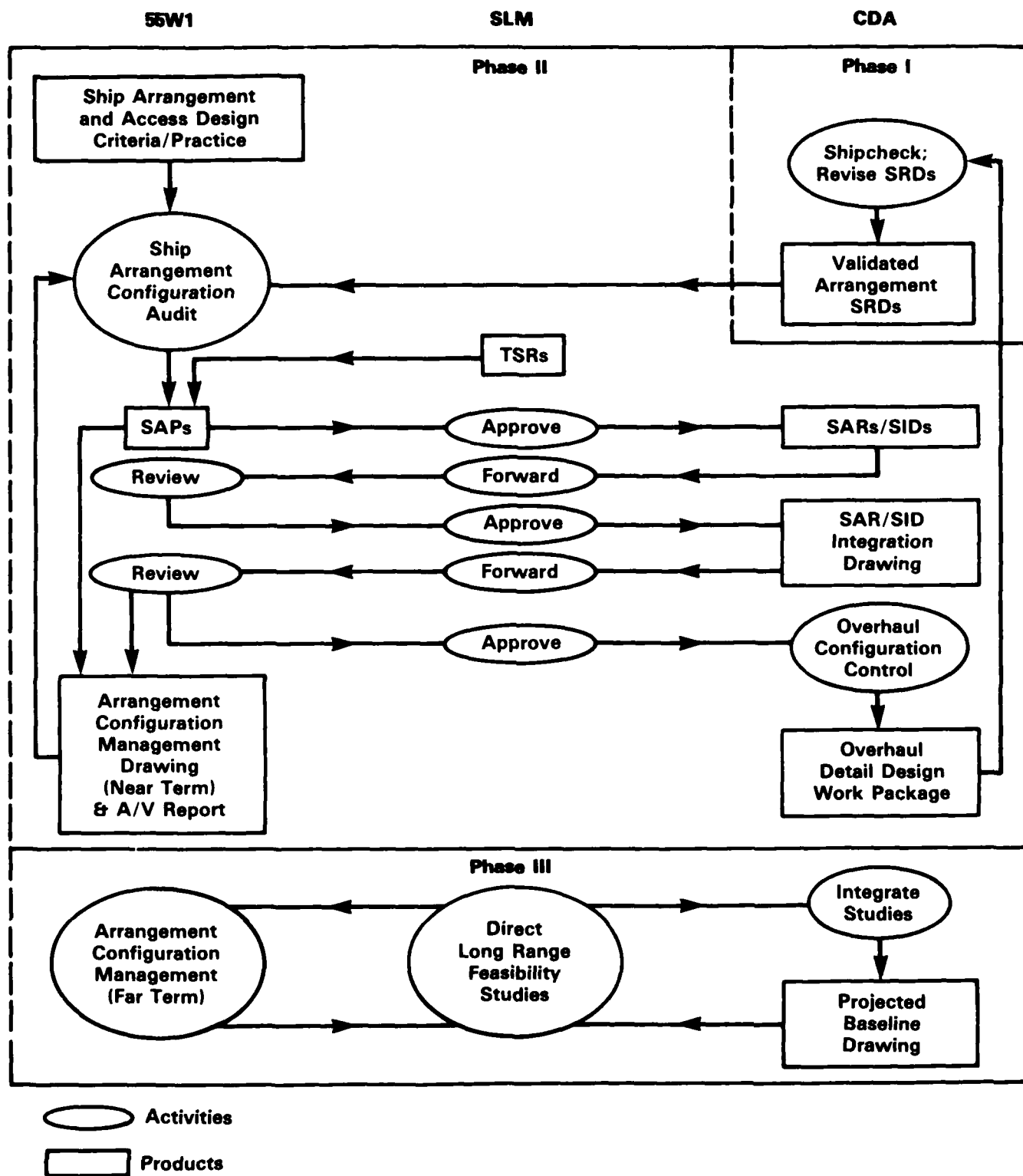


Figure 1.
Program Activities and Products

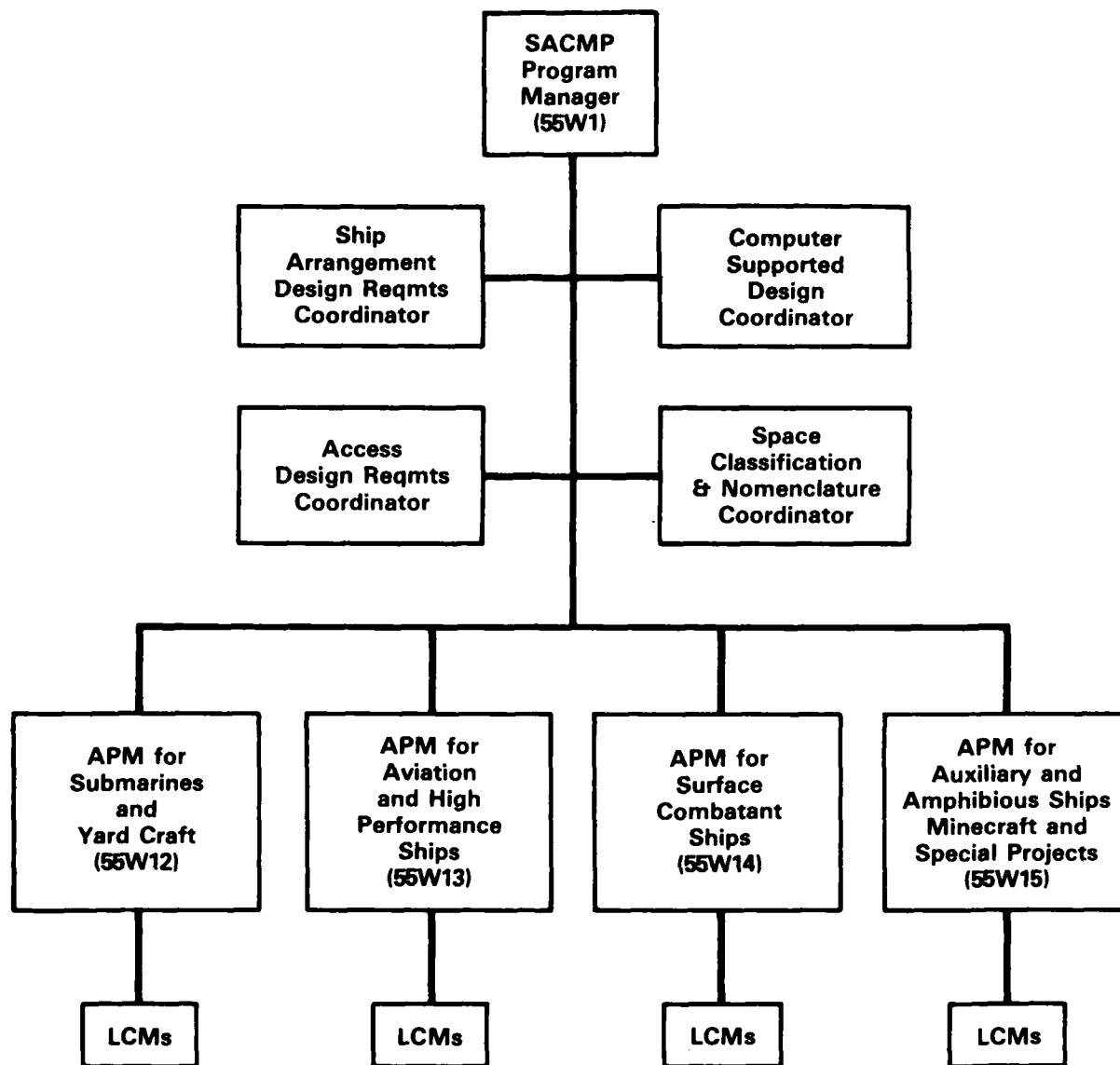


Figure 2.
Ship Arrangement Configuration Management Program
Structure and Flow of Responsibility

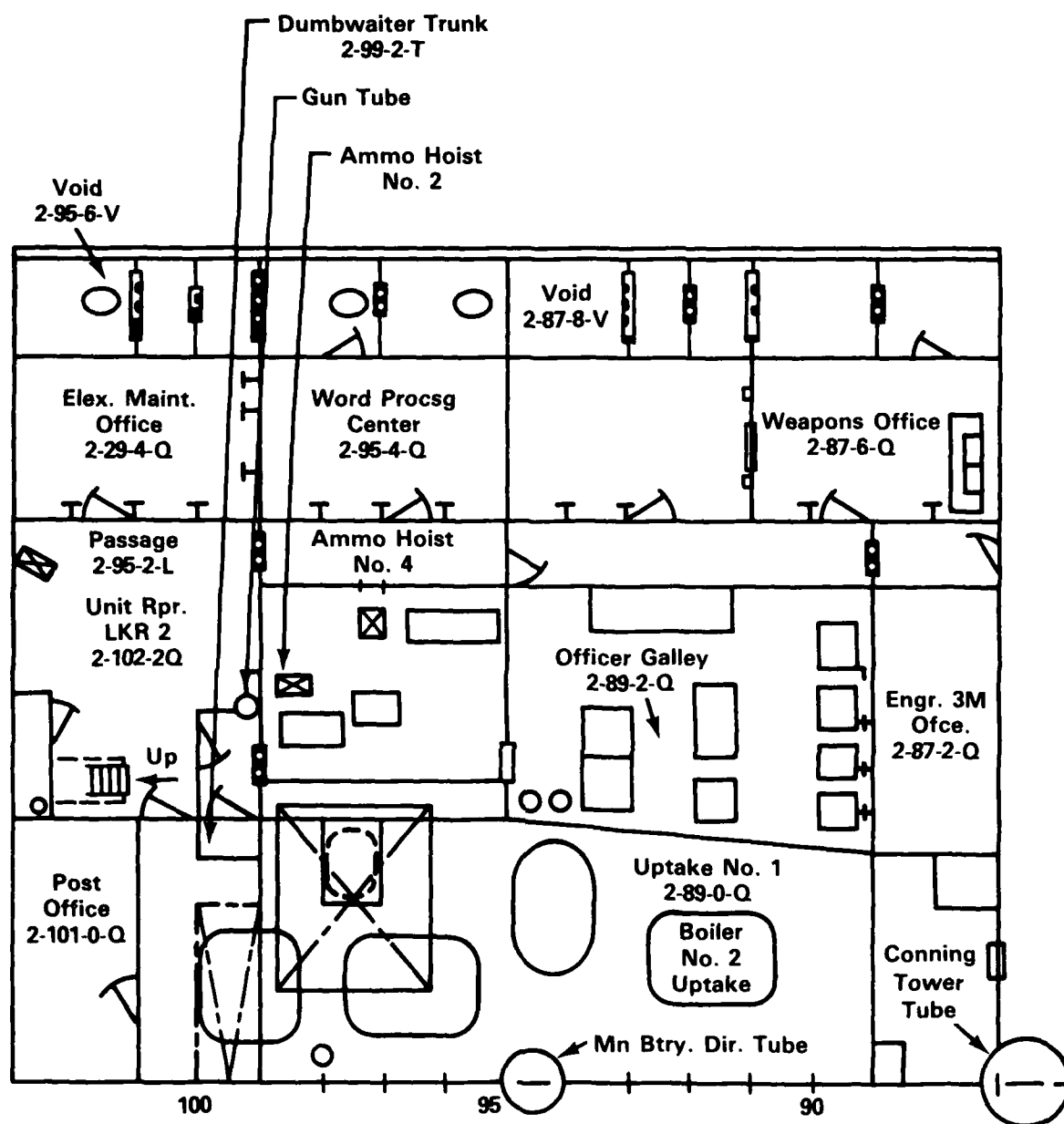


Figure 3.
 Battleship — Existing Arrangement
 Second Deck, Frames 89-103 (Port)

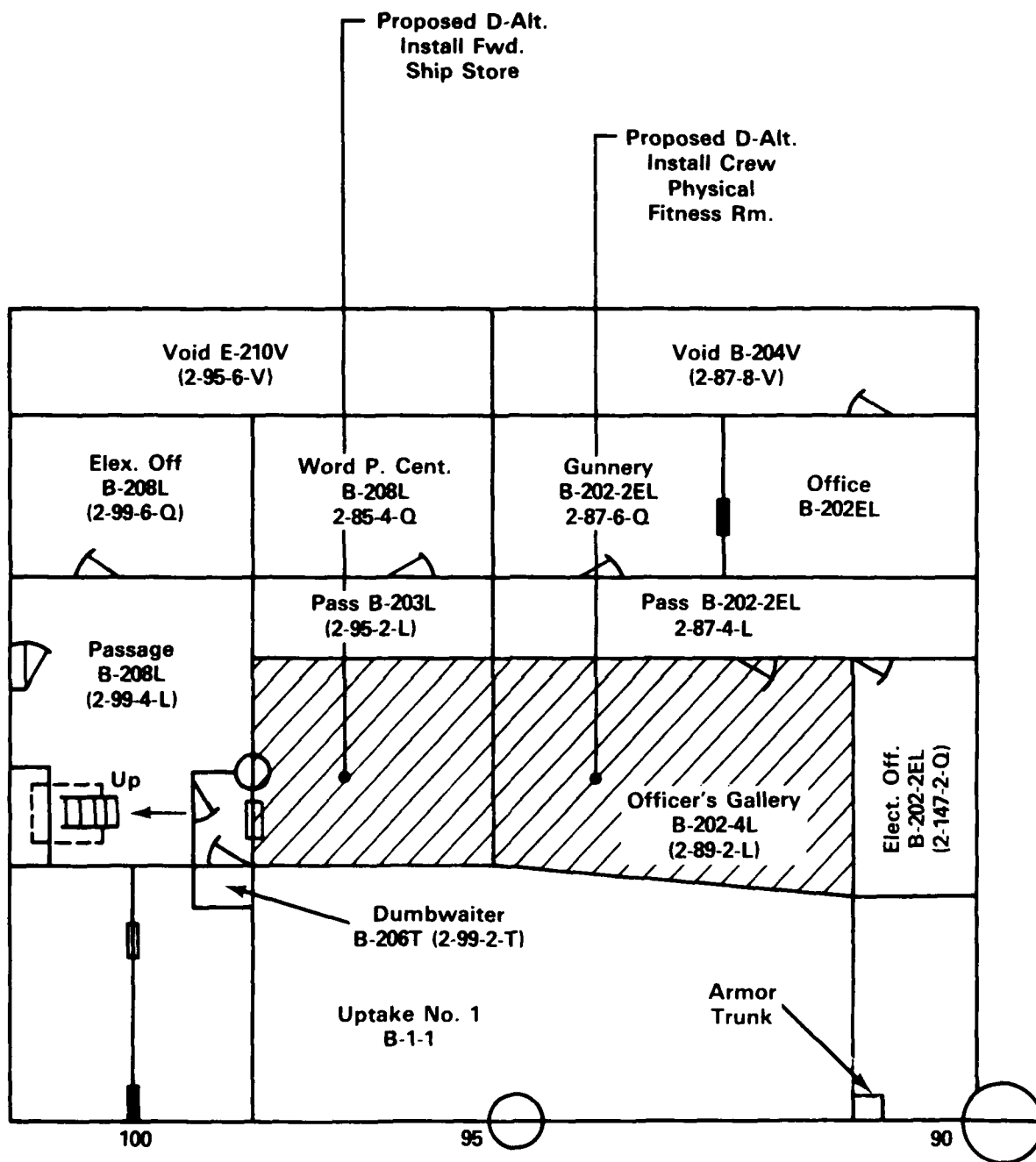


Figure 4.
Configuration Management Drawing
Second Deck, Frames 89-103 (Port)

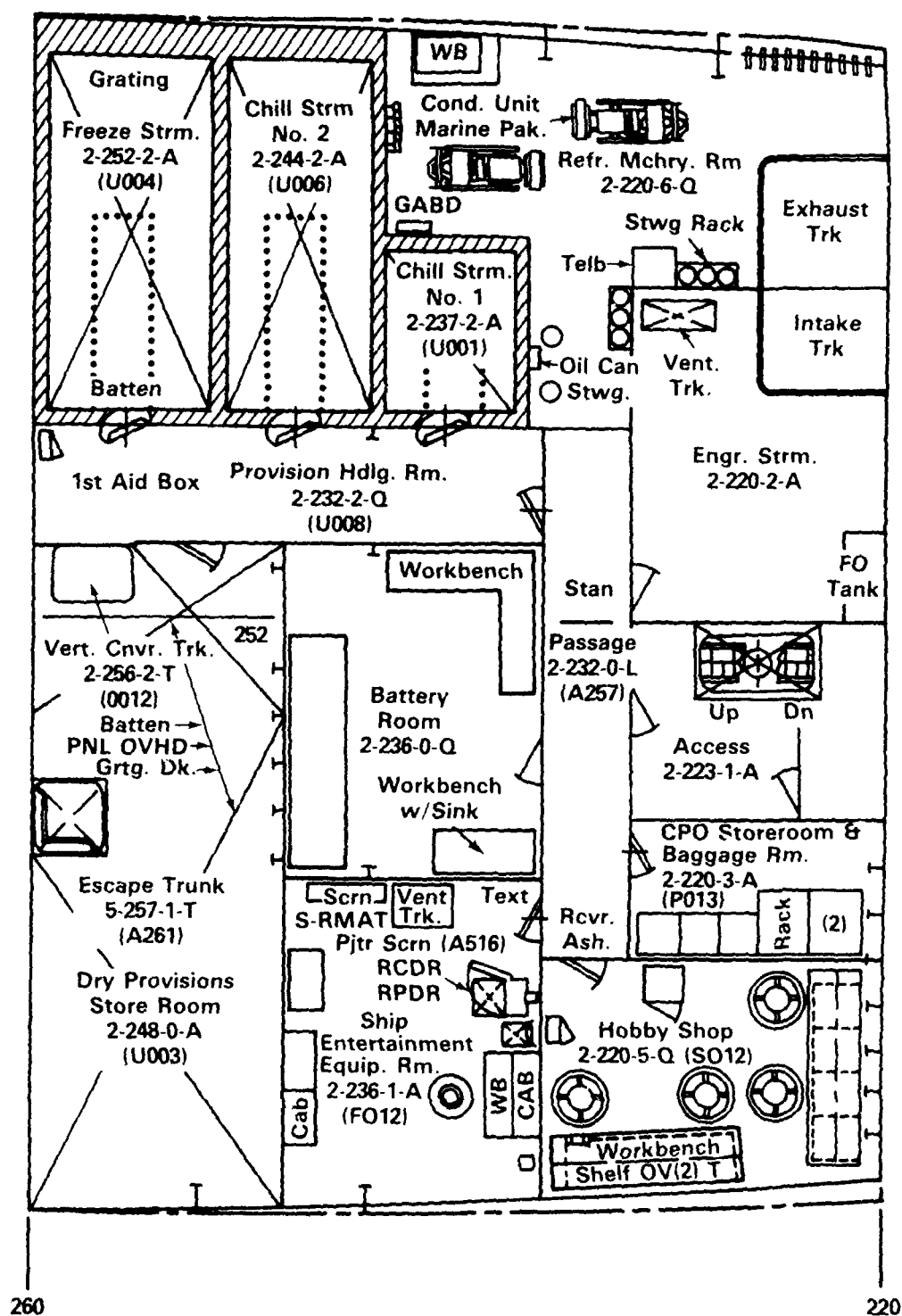


Figure 5.
Destroyer — Existing Arrangement
First Platform, Frames 220-260

Space Reserved for Future Installation
of Intake & Exhaust Trunks Incidental
to Shipalt DD 963-452

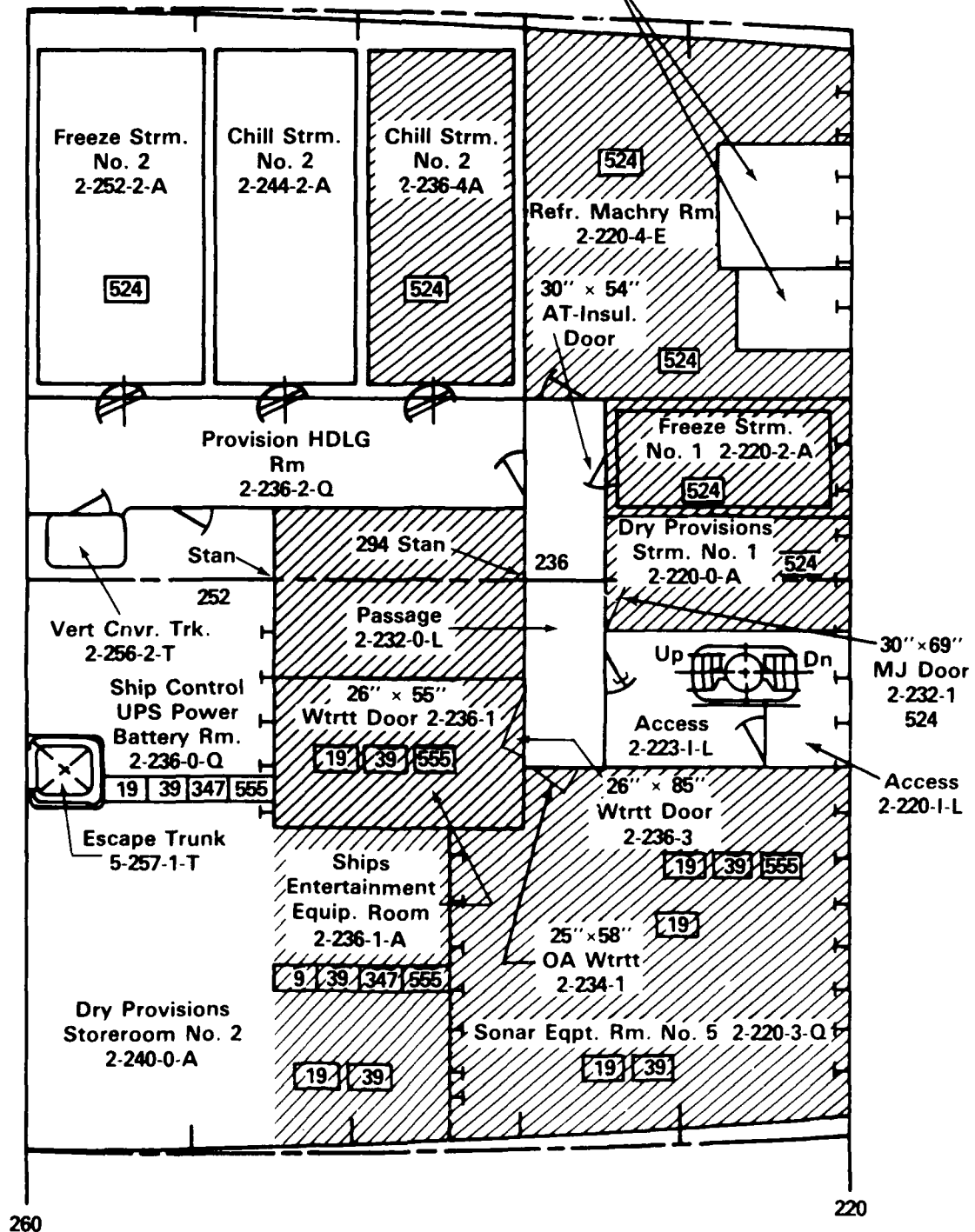


Figure 6.
Destroyer — Projected Class Baseline
First Platform, Frames 220-260

END

12-86

DTIC